

Box 25

Folder 41

1440

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Tree Ring Dates for the Kincaid Mounds

It has been recognized for some time that tree ring dating in the Mississippi Valley could best be established by the use of Juniperus virginiana, commonly known as red cedar. The use of cedar is imperative for two reasons; the best archaeological specimens are cedar, and the longest ring records derived from living or modern trees are cedar. With the selection of cedar for detailed and intensive study, it became necessary to construct an accurate master chart based on living trees.

With this aim in view, several weeks were spent in the field collecting modern cedar specimens from the general Kincaid area. It was found upon analysis of the collected material that these specimens from southern Illinois and adjacent portions of Kentucky displayed similar growth patterns, and that cross dating could be accomplished. At this point, however, a serious stumbling block was reached. The best of our collected cedar specimens had but 200 or so years represented, and many examples had only a few over 100 years growth. In order to have the necessary master chart for archaeological dating, we needed specimens with 400 or 500 years represented. Since it seemed impossible to obtain such specimens in the immediate vicinity of Kincaid it was necessary to extend the search for older trees farther and farther away from the Kincaid region. Yet it was essential that any such specimens maintain a correlation in growth patterns with the Kincaid area.

After considerable search it was found that the region about 40 miles south of St. Louis, Missouri would supply the desired specimens.

In this locality it was possible to collect modern cedar records which had the necessary span of years. We could and did obtain cedar ring records from this region which had from 200 to 400 or even 500 years represented. The ring records from this eastern Missouri area and those from the Kincaid region displayed similar patterns, and they would cross date with each other. This could not be checked, however, for the entire ring sequence since the Kincaid area specimens were not so old as the Missouri specimens. The years which could be compared, however, displayed patterns which could be cross dated with accuracy, and there is no reason to suspect that this agreement was not consistent in earlier times. Thus the evidence so far showed that Kincaid mound specimens could be expected to cross date into the combined Illinois-Missouri master series with all reliability. That one might expect some minor variations between the two localities seems reasonable, although, in general, the two areas are both within a larger tree ring area which as yet remains undelineated.

With this information and many additional specimens collected in the field available, a master chart combining the southern Illinois material and the eastern Missouri material has been prepared. It is by correlation with this specially developed cedar master chart that the dating of Kincaid has been possible.

The present master chart is based upon 63 specimens obtained in eastern Missouri, and 28 specimens obtained in southern Illinois or adjacent portions of Kentucky. There are 5 specimens which have

ring records extending back into the early 1400's, and one of these has a remarkable sequence back to about 1120. Just recently another specimen was received which also dates in the 1100's, so it is a check on this formerly unique specimen. Thus it is evident that we have a useable master series extending from about 1430 to 1943, with two specimens extending back into the early 1100's.

The useability of this master series is indicated by the fact that we have been able to use it to date many modern cedar specimens of unknown date. These have actually been incorporated into the master chart. Many times in collecting cedar specimens the best material comes from stumps or trees long since dead, but by cross dating on the master chart we have been able to date these specimens and to incorporate them into the series. For example, a cross-section taken from a dead cedar tree located on top of a bluff near Frumet, Missouri gave an outside ring date of 1852. Many other similar specimens were dated so that they demonstrated beyond all doubt that tree ring dating in the Mississippi Valley is possible. Given comparable material, it should be no more difficult to date an archaeological specimen than one of this sort - the unknown factors in one are just as great as in the other.

In a further attempt to demonstrate the validity of considering Kincaid and eastern Missouri within the same tree ring area, I would like to point out that it was possible to date similar cedar stumps or dead trees from the Illinois region. A cross-section cut from a dead cedar tree from Union county, Illinois cross dated into the

master chart producing a sequence from 1717 to 1901. A second specimen from the same locality dated from 1695 to 1854.

With an accurate and useable cedar master chart available it then became necessary to examine the archaeological specimens from the Kincaid site in order to select the promising pieces for dating purposes. A critical examination of the Kincaid materials produced 18 cedar specimens which seemed suitable for analysis. This included any specimens which, although displaying a short record, might offer corroborative evidence. Of these 18 specimens, 8 have been dated into the master chart.

The initial cross dating was accomplished by use of skeleton plots, with a final confirmation of the date derived by a critical cross matching on the actual wood itself.

With the dating of archaeological material and its implications within a new area, it was considered imperative that all relevant data be presented, so that anyone who desires to do so may evaluate the results. Upon a consideration and testing of several methods of presenting this material, the use of a bar-graph or histogram was thought most suitable. The histogram, based upon actual measurements, not only presents correlations for the diagnostic rings, but includes all rings in the series.

Unfortunately we do not have any bark or cutting dates for the Kincaid specimens - there are some rings missing from the outside of all pieces. An estimation of rings missing from the outside of the dated specimens is a guess and must be remembered as such. There are some criteria from which such a guess may be derived, but that it

is an estimation must be remembered. Such an estimate can be made by considering the general character of the rings, by heartwood-sapwood contacts, by a consideration of all radii dates, and by a consideration of the archaeological setting in which the specimen was found.

The final Kincaid mound dates might best be presented by a chart. I also have some slides demonstrating cross dating between modern and archaeological specimens.

Robert E. Bell

Present

Pinecroft

Late 1580 to 1630

Max 16

- 1589

Early Late

Max 4 - floor 2

21575

Late Middle

Middle 1510 - 1580

Max 4 633B

1573

Max 4 floor 3

1555

Middle Middle

Early 1450 - 1510

Max 4 1,2,3

1514

Early Middle

Max 4 1050

1510

The University of Chicago

Department of Anthropology

Oct. 15, 1946

Richard MacNeish
University of Michigan
Museum of Anthropology
Ann Arbor, Mich.

Dear Scotty:

I am enclosing a copy of my tree ring paper for the coming Christmas meetings. You may keep it. This will give you an idea of the material that I expect to cover. When you and Orr have prepared your material, I may want to make some modifications but suspect this will not interfere with any of your materials. As soon as you have a draft of your paper, I will be glad to receive a copy.

With best wishes,

Cordially,

Bob Bell

DÉNODCHEDDLY

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